ANALYTICAL RESULTS OF SURFACE WATER SAMPLES COLLECTED FROM RACCOON CREEK October 27, 1998 Sampling Event

Prepared for

ARCO CHEMICAL COMPANY/BEAZER EAST INC.

Prepared by

Applied Hydrology Associates, Inc.
Denver, Colorado

December 15, 1998

Applied
Hydrology
Associates, Inc.

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1.0 INTRODUCTION

This report presents the results of surface water samples collected from Raccoon Creek at the ARCO Chemical Company (ACC) / Beazer East Inc. (BEI) Monaca, PA site during the October 1998 quarterly monitoring event. The samples were collected in compliance with Appendix D of the Consent Order and Agreement (CO&A) between ARCO Chemical Company, BEI and the Pennsylvania Department of Environmental Protection (PADEP) dated October 20, 1997.

2.0 SAMPLING

Surface water samples were collected at Transect E as defined in the 1997 CO&A. The locations of Transect E is shown in Figure 1. In addition, water elevations were measured in nearby monitoring wells and the results are presented in Appendix A.

A total of nine surface water samples, including two duplicates were collected from Raccoon Creek on October 27, 1998. These samples were collected at the same three locations along Transect E as in previous sampling events. The locations are shown in Figure 2 and are at the center of the stream, and approximately 30 feet from the east and west banks. At the center location, samples were collected at three depths: 6 inches below surface, 2 inches above the bottom, and midway between the surface and bottom. Samples from the east and west sides of the transect were collected at two depths: 1 to 2 inches above the bottom, and midway between the surface and bottom.

During sampling the boat was anchored at Transect E and the anchors were laid away from the sampling location so sediment would not be introduced into the water sample. The samples were collected by using a peristaltic pump to pump water from the desired depth into three 40-milliliter vials preserved with hydrochloric acid. The depth of sample collection was controlled by securing tubing to a probe long enough to reach the bottom of the creek. The tubing was secured at the desired depth from the bottom of the probe, and the probe was set on the bottom of the creek. Care was taken not to disturb the sediments at the sampling location and the water was closely monitored to ensure sediment was not included in the sample. After the sample had been collected, the tubing was moved to the correct depth for the next sample, reattached to the probe, and the next sample was collected after again lowering the probe. One length of tubing was used for all sampling depths at each location. Tubing was discarded and replaced between sampling locations.

The samples were uniquely numbered as follows to identify the location, depth and date of sampling:

RC-EC-00-1098

Where:

RC	indicates Raccoon Creek;
EC	indicates Transect E and location (C = center, L = left bank, R = right bank ([facing downstream]);
00	indicates sample depth in feet and tenths of a foot (0.0 feet); and
1098	indicates the month and year collected (October 1998)

Samples were logged onto a chain of custody form (included as part of the data validation report in Appendix B) and stored on ice until receipt by Reliance Laboratories Inc. in Edison, NJ. Reliance analyzed the samples using USEPA Method 524.2 for BTEXS.

3.0 RESULTS

The analytical results are presented in Table 1, which is the Certificate of Analysis from Reliance Laboratories. Benzene was detected in six of the nine samples and concentrations in samples where benzene was detected ranged from 0.20 µg/L in Sample RC-EC-27-1098 to 1.63 µg/L in sample RC-EL-20-1098A. Sampling locations and depths are shown on Figure 2, along with the concentration of benzene at each location. Water levels in wells near Raccoon Creek are presented in Appendix A.

The analytical data were validated upon receipt and found to be acceptable. A Data Validation Report is included as Appendix B. Table 2 presents the historical concentration of benzene in Raccoon Creek at Transect E during all monitoring events to date.

TABLE 1

R E L I A N C E
LABORATORIES INC.

175 MAY STREET, EDISON, NJ 08837 PH (732) 738-5454 FAX (732) 738-5841
EMAIL: 74201.3501@COMPUSERVE.COM

LABORATORY ID
NJ DEP 12687
PA DER 68437

CERTIFICATE OF ANALYSIS

Customer: Arco / Beazer
Sample: Water Samples
Lab ID: R-6122
Reference: **Arco Beaver Valley**

11 November 1998

Units: µg/L

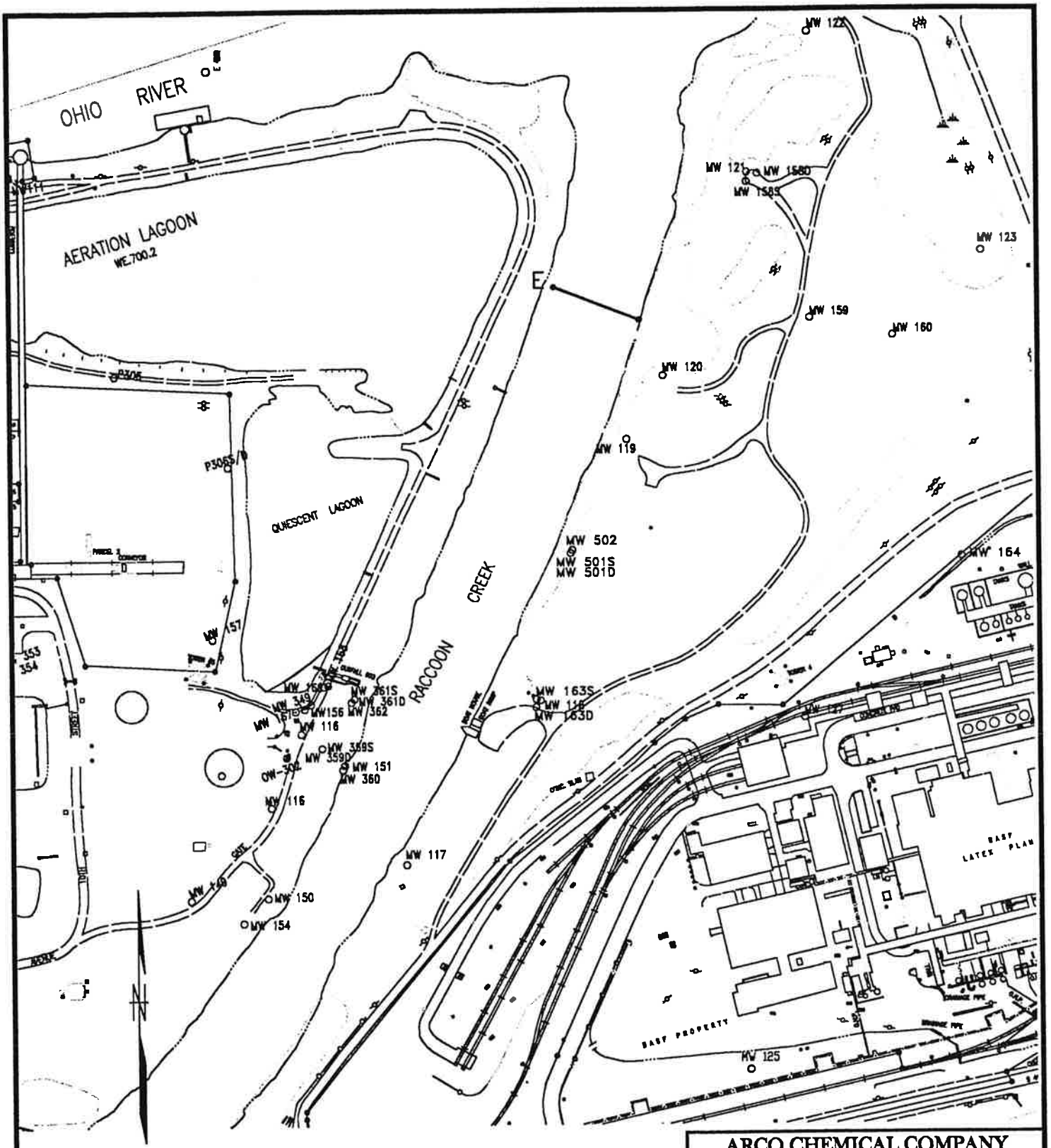
Sample ID	Benzene	Toluene	Ethylbenzene	Xylene	Styrene
RC-EL-20-1098	1.50	6.80	2.59	11.02	< 0.58
RC-EL-20-1098A	1.63	7.25	2.71	11.69	< 0.58
RC-EL-38-1098	0.42	1.60	0.59	2.58	< 0.58
RC-EL-38-1098A	0.79	4.90	2.52	10.62	< 0.58
RC-EC-00-1098	< 0.13	< 0.6	< 0.22	< 0.22	< 0.58
RC-EC-27-1098	0.20	< 0.6	< 0.22	0.56	< 0.58
RC-EC-57-1098	< 0.13	< 0.6	< 0.22	< 0.22	< 0.58
RC-ER-66-1098	< 0.13	< 0.6	< 0.22	< 0.22	< 0.58
RC-ER-35-1098	0.52	0.83	0.26	1.86	< 0.58

G. P. Kirpalani
Manager

Table 2
Historic Benzene Concentrations at Transect E
(ug/L)

Sampling Location	Sampling Depth	7/23/97	10/28/97	2/25/98	5/21/98	7/29/98	10/27/98
30 Feet off West Bank	Mid-depth	0.28	<0.13	<0.13	0.70	<0.13	1.57(1)
30 Feet off West Bank	Deep	0.81	<0.13	<0.13	0.70	<0.13	0.61(1)
Center of Creek	Shallow	0.24	<0.13	0.38	0.70	<0.13	<0.13
Center of Creek	Mid-Depth	0.18	<0.13	0.49	0.64	<0.13	0.2
Center of Creek	Deep	0.46	<0.13	0.30	0.60	<0.13	<0.13
30 Feet off East Bank	Mid-depth	0.16	<0.13	<0.13	<0.13	0.13	0.52
30 Feet off East Bank	Deep	<0.13	<0.13	0.14	0.22	0.22	<0.13

(1) Results shown area average of blind duplicate samples.

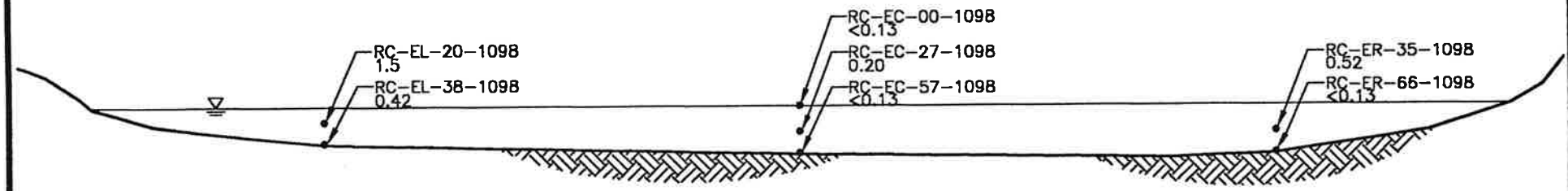


Applied Hydrology Associates, Inc.

ARCO CHEMICAL COMPANY
BEAVER VALLEY PROPERTY
RACCOON CREEK QUARTERLY MONITORING

FIGURE 1 TRANSECT AND MONITORING WELL LOCATIONS

DESIGN SM	DATE 8/27/98	FILE REFERENCE: TRANSECT.DWG	
DRAWN MJZ	SCALE		
CHECKED	APPROVED	PROJECT NO. 30-5	PAGE NO.



CREEK SECTION
LOOKING DOWNSTREAM

LEGEND

- SURFACE WATER SAMPLE LOCATION

ALL CONCENTRATIONS IN ug/L

20' 0 20'

SCALE IN FEET

Applied Hydrology Associates, Inc.

ARCO CHEMICAL COMPANY
BEAVER VALLEY PROPERTY
RACCOON CREEK QUARTERLY MONITORING

FIGURE 2

SURFACE WATER BENZENE CONCENTRATIONS AT TRANSECT 'E'

OCTOBER 27, 1998

SM	8/27/98	FILE REFERENCE: BENZENE.dwg	
MJZ	SCALE: NOT TO SCALE		
		PROJECT NO. 38-5	PAGE NO.

Appendix A

Groundwater Elevations, East and West Sides of Raccoon Creek

GROUNDWATER LEVELS ON THE EAST AND WEST SIDES OF RACCOON CREEK
October 27, 1998

Monitoring Wells Screened in Silty Clay Unit						
OTH AREA						
Well Number	**Top of Casing (TOC) (ft. amsl)**	**Depth to SPL from TOC (2) (ft. amsl)**	**Depth to Water from TOC (2) (ft. amsl)**	**Calculated Water Level Elevation (1) (ft. amsl)**	**Calculated SPL Thickness (3) (ft. amsl)**	**Comments**
MW - 360	685.84	ND	2.16	683.68	N/A	
MW - 170	706.70	ND	22.45	684.25	N/A	
MW 362	689.43	ND	5.72	683.71	N/A	
RACCOON CREEK AREA						
Well Number	**Top of Casing (TOC) (ft. amsl)**	**Depth to SPL from TOC (2) (ft. amsl)**	**Depth to Water from TOC (2) (ft. amsl)**	**Calculated Water Level Elevation (1) (ft. amsl)**	**Calculated SPL Thickness (3) (ft. amsl)**	**Comments**
MW- 118	690.39	ND	6.83	683.56	N/A	
MW - 502	701.86	ND	18.40	683.46	N/A	
MW - 119	705.59	ND	22.10	683.49	N/A	
MW - 120	709.42	ND	25.86	683.56	N/A	
MW - 121	713.90	ND	30.33	683.57	N/A	
MW - 152	696.35	ND	12.85	683.50	N/A	
Note: see figure 1						
(1) Calculated values, based on Elevation of TOC minus Depth to Water from TOC.						
(2) Measured from top of casing using the MMA Interface Probe. ND means no SPL was detected.						
(3) Calculated values, based on Depth to Water from TOC minus Depth to SPL from TOC. N/A means not applicable, no SPL was detected.						

GROUNDWATER LEVELS ON THE EAST AND WEST SIDES OF RACCOON CREEK
October 27, 1998

Monitoring Wells Screened in Upper Sand and Gravel Unit						
OTH AREA						
Well Number	**Top of Casing (TOC) (ft. amsl)**	**Depth to SPL from TOC (2) (ft. amsl)**	**Depth to Water from TOC (2) (ft. amsl)**	**Calculated Water Level Elevation (1) (ft. amsl)**	**Calculated SPL Thickness (3) (ft. amsl)**	**Comments**
MW - 344	709.42	ND	25.49	683.93	N/A	
MW - 359S	692.93	ND	9.33	683.60	N/A	
MW - 361S	689.40	ND	5.86	683.54	N/A	
MW - 169	707.93	ND	24.30	683.63	N/A	
MW - 167	707.36	ND	23.81	683.55	N/A	
Note: see figure 2						
(1) Calculated values, based on Elevation of TOC minus Depth to Water from TOC.						
(2) Measured from top of casing using the MMA Interface Probe. ND means no SPL was detected.						
(3) Calculated values, based on Depth to Water from TOC minus Depth to SPL from TOC. N/A means not applicable, no SPL was detected.						

GROUNDWATER LEVELS ON THE EAST AND WEST SIDES OF RACCOON CREEK
October 27, 1998

Monitoring Wells Screened in Upper Sand and Gravel Unit						
RACCOON CREEK AREA						
Well Number	**Top of Casing (TOC) (ft. amsl)**	**Depth to SPL from TOC (2) (ft. amsl)**	**Depth to Water from TOC (2) (ft. amsl)**	**Calculated Water Level Elevation (1) (ft. amsl)**	**Calculated SPL Thickness (3) (ft. amsl)**	**Comments**
MW - 163S	690.87	ND	7.31	683.56	N/A	
MW - 501S	701.30	ND	18.08	683.22	N/A	
MW - 162S	706.05	ND	22.55	683.50	N/A	
MW - 159	708.99	ND	25.47	683.52	N/A	
MW - 160	701.00	ND	17.46	683.54	N/A	
MW - 158S	713.60	ND	30.10	683.50	N/A	
MW - 122	692.78	ND	9.29	683.49	N/A	
Note: see figure 2						
(1) Calculated values, based on Elevation of TOC minus Depth to Water from TOC.						
(2) Measured from top of casing using the MMA Interface Probe. ND means no SPL was detected.						
(3) Calculated values, based on Depth to Water from TOC minus Depth to SPL from TOC. N/A means not applicable, no SPL was detected.						
(4) Could not determine interface between SPL and groundwater. SPL elevation shown.						

GROUNDWATER LEVELS ON THE EAST AND WEST SIDES OF RACCOON CREEK
October 27, 1998

Water levels in Raccoon Creek and Ohio River					
RACCOON CREEK AREA STAFF GAUGE					
Time of observation	Staff Gauge Elevation (a) (ft. amsl)	Staff Gauge reading	Calculated Water Level Elevation (ft. amsl)	Comments	
12:05	685.00	1.47	683.47		
13:41	685.00	1.49	683.49		
OHIO RIVER. STAFF GAUGE					
Time of observation	Staff Gauge Elevation (b) (ft. amsl)	Staff Gauge reading	Calculated Water Level Elevation (ft. amsl)	Comments	
11:54	685.96	3.46	683.42		
13:20	685.96	3.50	683.46		
(a) Elevation 685.00 is equivalent to 3.00 mark on staff gauge Raccoon Creek					
(b) Elevation 685.96 is equivalent to 6.00 mark on staff gauge Ohio River					

GROUNDWATER LEVELS ON THE EAST AND WEST SIDES OF RACCOON CREEK
October 27, 1998

Monitoring Wells Screened in Lower Sand and Gravel Unit						
OTH AREA						
Well Number	**Top of Casing (TOC) (ft. amsl)**	**Depth to SPL from TOC (2) (ft. amsl)**	**Depth to Water from TOC (2) (ft. amsl)**	**Calculated Water Level Elevation (1) (ft. amsl)**	**Calculated SPL Thickness (3) (ft. amsl)**	**Comments**
MW 345	708.91	ND	25.41	683.50	N/A	
MW 361D	689.35	ND	5.79	683.56	N/A	
MW 359D	692.80	ND	9.30	683.50	N/A	
RACCOON CREEK AREA						
Well Number	**Top of Casing (TOC) (ft. amsl)**	**Depth to SPL from TOC (2) (ft. amsl)**	**Depth to Water from TOC (2) (ft. amsl)**	**Calculated Water Level Elevation (1) (ft. amsl)**	**Calculated SPL Thickness (3) (ft. amsl)**	**Comments**
MW 163D	689.62	ND	6.00	683.62	N/A	
MW 501D	701.44	ND	17.99	683.45	N/A	
MW 166D	703.95	ND	20.51	683.44	N/A	
MW 158D	712.04	ND	28.68	683.36	N/A	
Note: see figure 4						
(1) Calculated values, based on Elevation of TOC minus Depth to Water from TOC.						
(2) Measured from top of casing using the MMA Interface Probe. ND means no SPL was detected.						
(3) Calculated values, based on Depth to Water from TOC minus Depth to SPL from TOC. N/A means not applicable, no SPL was detected.						

Appendix B

Data Validation Report

Applied Hydrology Associates, Inc.
1200 South Parker Road, Suite 100 Denver, CO 80231 Tel: (303) 873-0164 Fax: (303) 873-6110

M E M O R A N D U M

TO: Skip Meier, Applied Hydrology Associates
FROM: Adam Bedard, Applied Hydrology Associates
DATE: December 9, 1998
SUBJECT: Data Validation Results, Lyondell Petrochemical Company Beaver Valley Property

Data validation was performed on the volatile organic analytical data from nine surface water samples obtained from Raccoon Creek on October 27, 1998. The validation was performed in accordance with the "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review". Reliance Laboratories Inc. performed the analysis using EPA Method 524.2. The samples reviewed included:

Field Sample ID	Lab Sample ID
EL-20-1098	R-6075.1
EL-20-1098A	R-6075.2
EL-38-1098	R-6075.3
EL-38-1098A	R-6075.4
EC-00-1098	R-6075.5
EC-27-1098	R-6075.6
EC-57-1098	R-6075.7
EC-66-1098	R-6075.8
EC-35-1098	R-6075.9

Items reviewed and actions taken were as follows:

√ **Method:**
The nine samples were analyzed for BTEXS by method USEPA 524.2 on October 29, 1998.

√ **Holding Time:**
All Samples were analyzed within the 14-day holding time.

√ **Blanks:**
No target compounds were detected in the associated method blank.

√ **System Monitoring Compounds:**

The "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review" indicate that "Recoveries for system monitoring compounds in volatile samples and blanks must be within the limits specified in the Method." However, Method 524.2 does not specify a required recovery. However, 4-bromofluorobenzene and 1,2-dichlorobenzene-d4 surrogate recoveries were within 78-94 percent and this is acceptable.

√ **Internal Standards:**

All fluorobenzene internal standards were within the established criteria for area internal standard and retention time.

√ **GC/MS Instrument Performance Check:**

All bromofluorobenzene (BFB) tunes met the ion abundance criteria. Analysis of the instrument performance check solution was performed at the beginning of each 12-hr period during which the samples were analyzed.

√ **Initial Calibrations:**

The initial calibration performed on October 7, 1998 for Instrument HP5971A met the 30 percent relative standard deviation (RSD) and 0.05 minimum relative response factor criteria for all compounds.

√ **Continuing Calibrations:**

Continuing calibration was run and compared to the correct initial calibration. All continuing calibrations met the 25 percent difference and minimum relative response factor criteria for all compounds.

√ **Matrix Spike/Duplicate:**

The matrix spike/duplicate results for recovery and RPD were within the advisory limits.

√ **Target Compound Indentification/Quantitation:**

No problems were identified with compound identification or quantities.

√ **Field Duplicate:**

Two pairs of field duplicates were collected during this sampling event. Duplicate samples are denoted by an "A" at the end of the sample name. The pairs are: RC-EL-20-1098 and duplicate RC-EL-20-1098A, and RC-EL-38-1098 and duplicate RC-EL-38-1098A. Table 1 below summarizes the RPD for the two sample/duplicate pairs.

Table 1: Relative Percent Difference (RFD)

Sample Name	Benzene (ppb)	RPD (%)	Toluene (ppb)	RPD (%)	Ethyl-Benzene (ppb)	RPD (%)	Xylene (ppb)	RPD (%)	Styrene (ppb)	RPD (%)
RC-EL-20-1098	1.50	8.3	6.80	6.4	2.59	4.5	11.02	5.9	ND	NA
RC-EL-20-1098A	1.63		7.25		2.71		11.69		ND	NA
RC-EL-38-1098	0.42	61.2	1.60	101.5	0.59	124.1	2.58	121.8	ND	NA
RC-EL-38-1098A	0.79		4.90		2.52		10.62		ND	NA

ND = Non Detect

NA = Not Applicable

√ **Summary:**

The overall quality of the data was good, although there was poor agreement between duplicate sample pair RC-EL-38-1098/RC-EL-38-1098A (See Table 1). Also no trip blank was included with the samples sent to the lab. This oversight will be remedied in subsequent sampling events.

RELIANCE
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ANALYTICAL REPORT

For
Arco Chemical Co.
Pittsburg, PA 15219

Project: Raccoon Creek

RELIANCE
LABORATORIES, INC.

175 MAY STREET, EDISON, NJ 08837 PH (732) 738-5454 FAX (732) 738-5841
EMAIL: 74201.3501@COMPUSERVE.COM

ANALYTICAL DATA REPORT

for

Arco Chemical Co.
Pittsburg, PA 15219
Project: Raccoon Creek

Date Received: 10/28/98

Sample ID	Lab ID #
EL-20-1098	R-6122.1
EL-20-1098A	R-6122.2
EL-38-1098	R-6122.3
EL-38-1098A	R-6122.4
EC-00-1098	R-6122.5
EC-27-1098	R-6122.6
EC-57-1098	R-6122.7
ER-66-1098	R-6122.8
ER-35-1098	R-6122.9

These samples have been analyzed by EPA method 524.2 for a selected compound list. The results are not designed for use for drinking water purposes.

G. P. Kirpalani
Manager

GPK/vb

RELIANCE
LABORATORIES INC.

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REDUCED LABORATORY DATA DELIVERABLES

		Check if Complete
I.	Cover Page, Format, and Laboratory Certification (Include Cross Reference Table of Field I.D. and Lab I.D)	✓
II.	Chain of Custody	✓
III.	Summary Sheets listing analytical results Including QA Data Information	✓
IV.	Laboratory Chronicle and Methodology	✓
V.	Initial Calibration and Continuing Calibration	✓
VI.	Tune Summary (MS)	✓
VII.	Blank Summary	✓
VIII.	Surrogate Recovery Summary	✓
IX.	Chromatograms / IR Spectra	✓
X.	Internal Standard Summary (MS)	✓
XI.	Matrix Spike / Spike Duplicate Summary	✓
XII.	Non-Conformance Summary	✓

GP Kurtalani
Laboratory Manager
Signature

11/10/98
Date

RELIANCE
LABORATORIES INC.

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EMAIL: 74201.3501@COMPUSERVE.COM

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RELIANCE
LABORATORIES, INC.

175 MAY STREET, EDISON, NJ 08837 PH (732) 738-5454 FAX (732) 738-5841
EMAIL: 74201.3501@COMPUSERVE.COM

LABORATORY CHRONICLE

Customer Name Arco Chemical Co.
Date Received: 10/28/98
Date Sampled: 10/27/98
Sample ID: As per chain of custody

Organic Extraction:

1 Acids
2 Base / Neutrals
3 Pesticides/PCB's
4 TPHC

Analysis:

1 Volatiles 10/28/98
2 Acids
3 Base/Neutrals
4 Pesticides/PCB's
5 TPHC

Inorganics:

1 Metals
2 Cyanides
3 Phenols

Other Analysis:

Supervisor
Review & Approval

RELIANCE
LABORATORIES INC.

3090 WOODBRIDGE AVENUE, EDISON NJ 08837 PH (908) 738-5454 FAX (908) 738-5841

NON-CONFORMANCE SUMMARY

Reliance Labs received 9 water sample for BTEXS (EPA 524.2) from Arco/Beazer on 28 October 1998. Samples consisted of 9 vials.

Matrix spike recovery analysis was performed on previous samples and results are attached.

All analyses were performed within the required holding time.

STANDARD OPERATING PROCEDURE
METHOD 524.2

1. Scope

This is the general method for the procedure used to identify purgeable volatile organics in portable water. The sample is purged with ultra high purity helium and concentrated into a trap. The volatiles are then thermally desorbed onto a megabore column and identified using a mass spectrometer detector.

2. Equipment and Apparatus

A. Sample containers- 40ml screw caps amber vials.

B. Purge and Trap System.
   1. 25cm VOCARB 3000 trap.

C. Glassware
   1. 20 ml fritted purging vessels.
   2. 25 ml teflon sealed syringe with lever lock assembly.
   3. 10 µL syringes.

D. Gas Chromographic / Mass Spectrometer.
   1. Column type J&W
      75 m, 0.53 mm ID, DB624 3 microns

E. Apparatus Conditions
   1. Tekmar (purge and trap)

a.	Purge time	:	2 min.
b.	Desorb time and temp.	:	250° for 2 min.
c.	Bake time and temp.	:	260° for 12 min.
d.	Flow rate	:	15 cc/min.

   2. GC Conditions

a.	Column flow	15 cc/min.
b.	Initial temp.	35° C
c.	Ramping Rate	6° C/min.
d.	Final temp.	200° C
e.	Run time	47.25 min.
f.	Initial time	6 min.

3. Stock Standards

A. Internal Standard
   1. Flourobenzene

B. Surrogates
   1. 1,2-dichlorobenzene-d4
   2. 4-bromoflurobenzene

C. Prepare standard solutions for all target compounds and surrogates at 20 ppm.

D. Prepare internal standard at 20 ppm in methanol.
   1. Prepare all standards and store in teflon sealed 1 ml vials.

4. Run Sequence

A. Tune Instrument

1. Inject 1μL of 25 ppm BFB into GC.
   a. Tune must pass against criteria.
   b. Tune must be run before any samples, blank or calibrations can be run.
   c. From time to tune 12 hours are available to run all QC data and samples.

B. Three Point Calibration Curve

1. Purge five (3) concentrations of standard solutions containing all the target analysis at 1 ppb, 2 ppb, 5 ppb.
2. The above standard must be run within 12 hours of injecting the BFB tune.
3. Created a calibration curve with the above standard runs.
   a. If the 30% RSD deviation is exceeded the standards must be run again (still within 12 hours)
4. Create an identification file from this calibration curve for automated quantification.

C. If time remains in the 12-hour run period go to step F.

D. If the 12-hour period has expired, a new tune must be injected and a new sequence must be started.

E. Once an initial calibration curve is established a continuing calibrations check may be run. A continuing calibration check is required every time the mass spectrometer is tuned.

1. 2 ppb concentration of all target compounds is purged and quanted against current ID file.
2. Check the response factors of this run against the average RF of the calibration file. The RF of the continuing calibration must be within ± 50% D (difference) of the 5 point for all compounds.
3. The area counts of internal standard and surrogates must not be decreased by >30% from the most recent continuing calibration standard nor decrease by >50% from the initial calibration standard.

F. Daily Blank

1. Purge 20 ml of laboratory reagent water (nanopure) with 5 ppb internal standard and 5 ppb each surrogate.
2. Run this blank and quant against current ID file.
3. If blank does not meet criteria, it must be rerun before analyzing any samples.

G. Samples

1. Fill 25 ml syringe until it overflows with sample. Then adjust the volume to 20 ml exactly.
2. Inject 5 μl each 25 ppm internal standard and surrogate standard solution into each sample.
3. Run and quant against the current 5 point calibration curves.
4. Any sample with target compound over 5 ppb must be rerun at the appropriate dilution.
5. Any sample not injected in 12-hour period must be rerun.

H. Quality Control Sample (QCS)

1. Analyze a QCS from an external source at least quarterly.

TABLE 1

R E L I A N C E
LABORATORIES INC.

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EMAIL: 74201.3501@COMPUSERVE.COM

LABORATORY ID
NJ DEP 12687
PA DER 68437

CERTIFICATE OF ANALYSIS

Customer: Arco / Beazer
Sample: Water Samples
Lab ID: R-6122
Reference: **Arco Beaver Valley**

11 November 1998

Units: µg/L

Sample ID	Benzene	Toluene	Ethylbenzene	Xylene	Styrene
RC-EL-20-1098	1.50	6.80	2.59	11.02	< 0.58
RC-EL-20-1098A	1.63	7.25	2.71	11.69	< 0.58
RC-EL-38-1098	0.42	1.60	0.59	2.58	< 0.58
RC-EL-38-1098A	0.79	4.90	2.52	10.62	< 0.58
RC-EC-00-1098	< 0.13	< 0.6	< 0.22	< 0.22	< 0.58
RC-EC-27-1098	0.20	< 0.6	< 0.22	0.56	< 0.58
RC-EC-57-1098	< 0.13	< 0.6	< 0.22	< 0.22	< 0.58
RC-ER-66-1098	< 0.13	< 0.6	< 0.22	< 0.22	< 0.58
RC-ER-35-1098	0.52	0.83	0.26	1.86	< 0.58

G. P. Kirpalani
Manager

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5783.D
Acq On : 28 Oct 98 2:37 pm
Sample : R-6122.1
Misc : Arco - RC-EL-20-1098
Quant Time: Oct 29 9:33 1998

Vial: 7
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.88	96	1557949	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.97	95	551387	4.69	ug/L	93.76%
55) 1,2-dichlorobenzene-d4	31.13	152	337652	4.40	ug/L	87.92%
Target Compounds						Qvalue
19) Benzene	12.05	78	468786	1.50	ug/L	99
26) Toluene	17.73	91	2637091	6.80	ug/L	99
35) Ethylbenzene	22.56	91	903002	2.59	ug/L	96
36) m&p-xylenes	22.97	106	1265459	5.09	ug/L	98
37) o-xylene	24.24	91	1400961	5.93	ug/L	97
40) Isopropylbenzene	25.52	105	165451	0.51	ug/L	97
45) n-propylbenzene	26.92	91	659413	1.48	ug/L	99
48) 1,3,5-trimethylbenzene	27.56	105	631022	2.65	ug/L	95
50) 1,2,4-trimethylbenzene	28.81	105	2511377	11.19	ug/L	96
61) Naphthalene	37.64	128	43769	0.52	ug/L	93

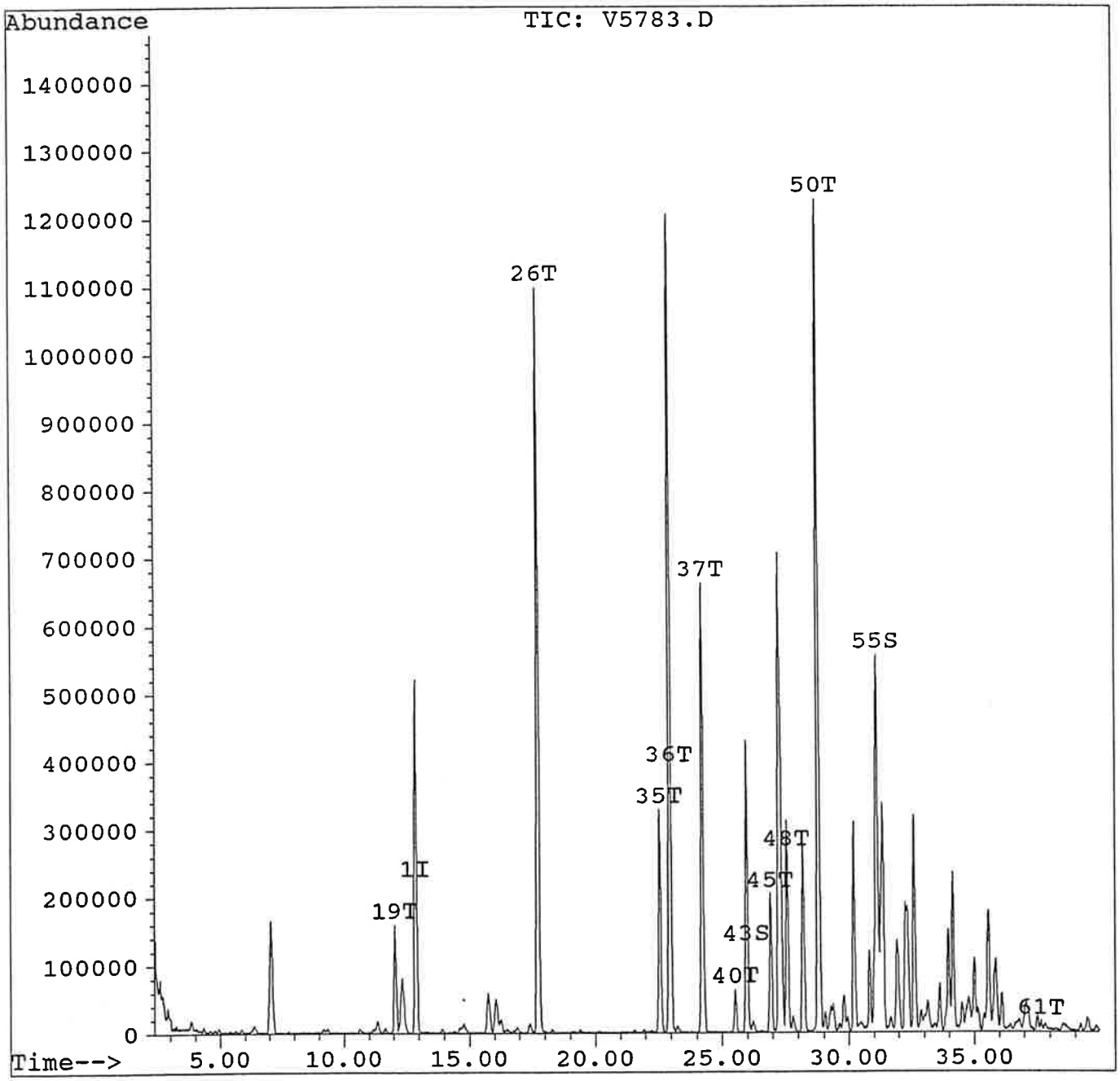
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5783.D
Acq On : 28 Oct 98 2:37 pm
Sample : R-6122.1
Misc : Arco - RC-EL-20-1098
Quant Time: Oct 29 9:33 1998

Vial: 7
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



307

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5784.D
Acq On : 28 Oct 98 3:24 pm
Sample : R-6122.2
Misc : Arco - RC-EL-20-1098A
Quant Time: Oct 29 9:21 1998

Vial: 8
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.87	96	1639515	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.97	95	564298	4.56	ug/L	91.18%
55) 1,2-dichlorobenzene-d4	31.13	152	354794	4.39	ug/L	87.79%
Target Compounds						Qvalue
19) Benzene	12.06	78	537678	1.63	ug/L	99
26) Toluene	17.74	91	2957316	7.25	ug/L	98
35) Ethylbenzene	22.56	91	995716	2.71	ug/L	96
36) m&p-xylenes	22.96	106	1444393	5.52	ug/L	98
37) o-xylene	24.24	91	1532378	6.17	ug/L	98
40) Isopropylbenzene	25.53	105	170743	0.50	ug/L	98
45) n-propylbenzene	26.91	91	701923	1.49	ug/L	99
48) 1,3,5-trimethylbenzene	27.56	105	680182	2.72	ug/L	95
50) 1,2,4-trimethylbenzene	28.80	105	2682557	11.36	ug/L	94
61) Naphthalene	37.65	128	198770	2.24	ug/L	98

(#) = qualifier out of range (m) = manual integration

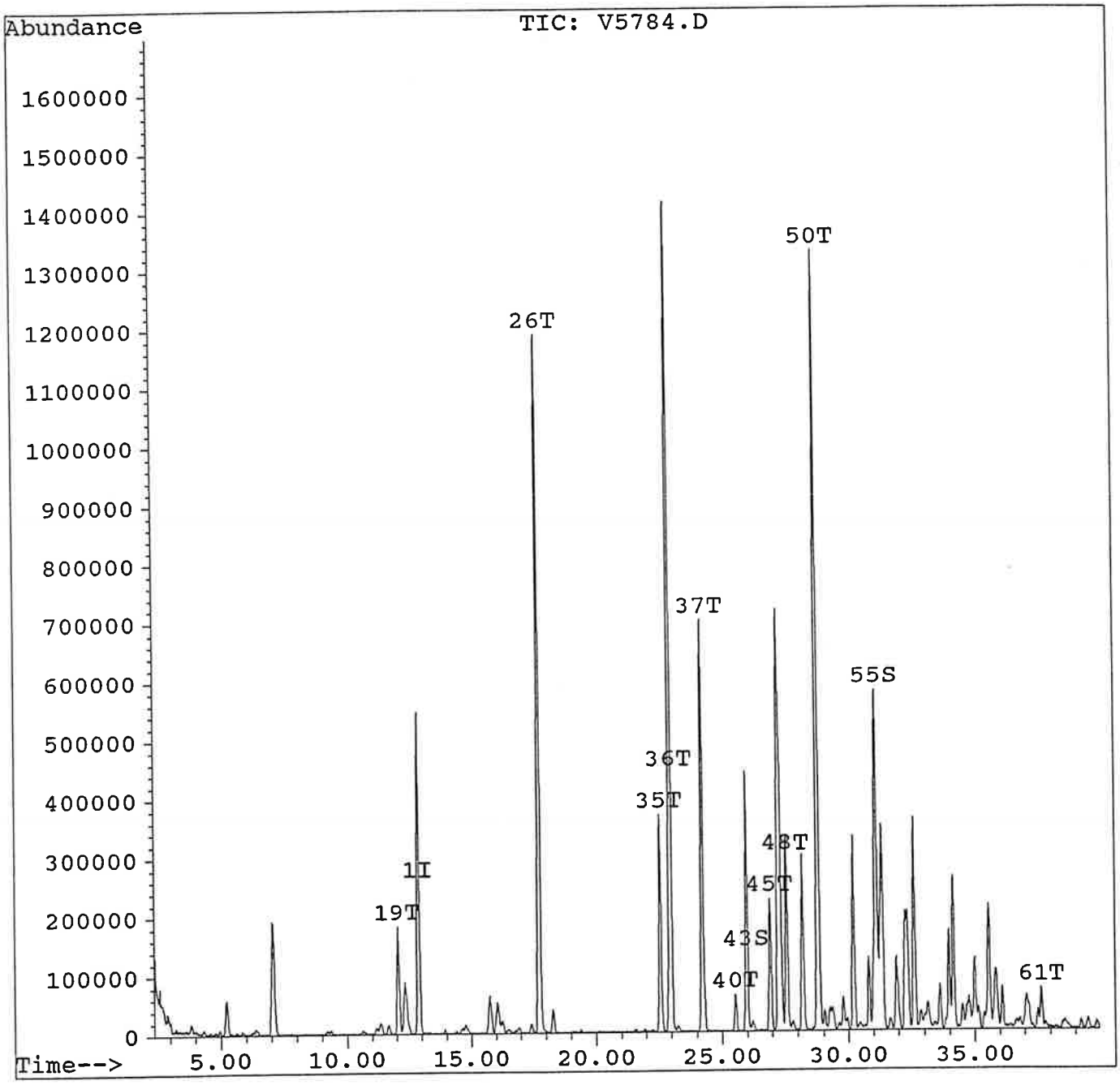
JUS

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5784.D
Acq On : 28 Oct 98 3:24 pm
Sample : R-6122.2
Misc : Arco - RC-EL-20-1098A
Quant Time: Oct 29 9:21 1998

Vial: 8
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



300

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5785.D
Acq On : 28 Oct 98 4:10 pm
Sample : R-6122.3
Misc : Arco - RC-EL-38-1098
Quant Time: Oct 29 8:51 1998

Vial: 9
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.87	96	1557842	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.97	95	540403	4.60	ug/L	91.90%
55) 1,2-dichlorobenzene-d4	31.13	152	333812	4.35	ug/L	86.93%
Target Compounds						Qvalue
19) Benzene	12.05	78	132567	0.42	ug/L	99
26) Toluene	17.73	91	619884	1.60	ug/L	100
35) Ethylbenzene	22.56	91	204439	0.59	ug/L	95
36) m&p-xylenes	22.95	106	292646	1.18	ug/L	90
37) o-xylene	24.25	91	329957	1.40	ug/L	97
48) 1,3,5-trimethylbenzene	27.56	105	153626	0.65	ug/L	92
50) 1,2,4-trimethylbenzene	28.80	105	572358	2.55	ug/L	99
61) Naphthalene	37.65	128	180269	2.13	ug/L	97

(#) = qualifier out of range (m) = manual integration

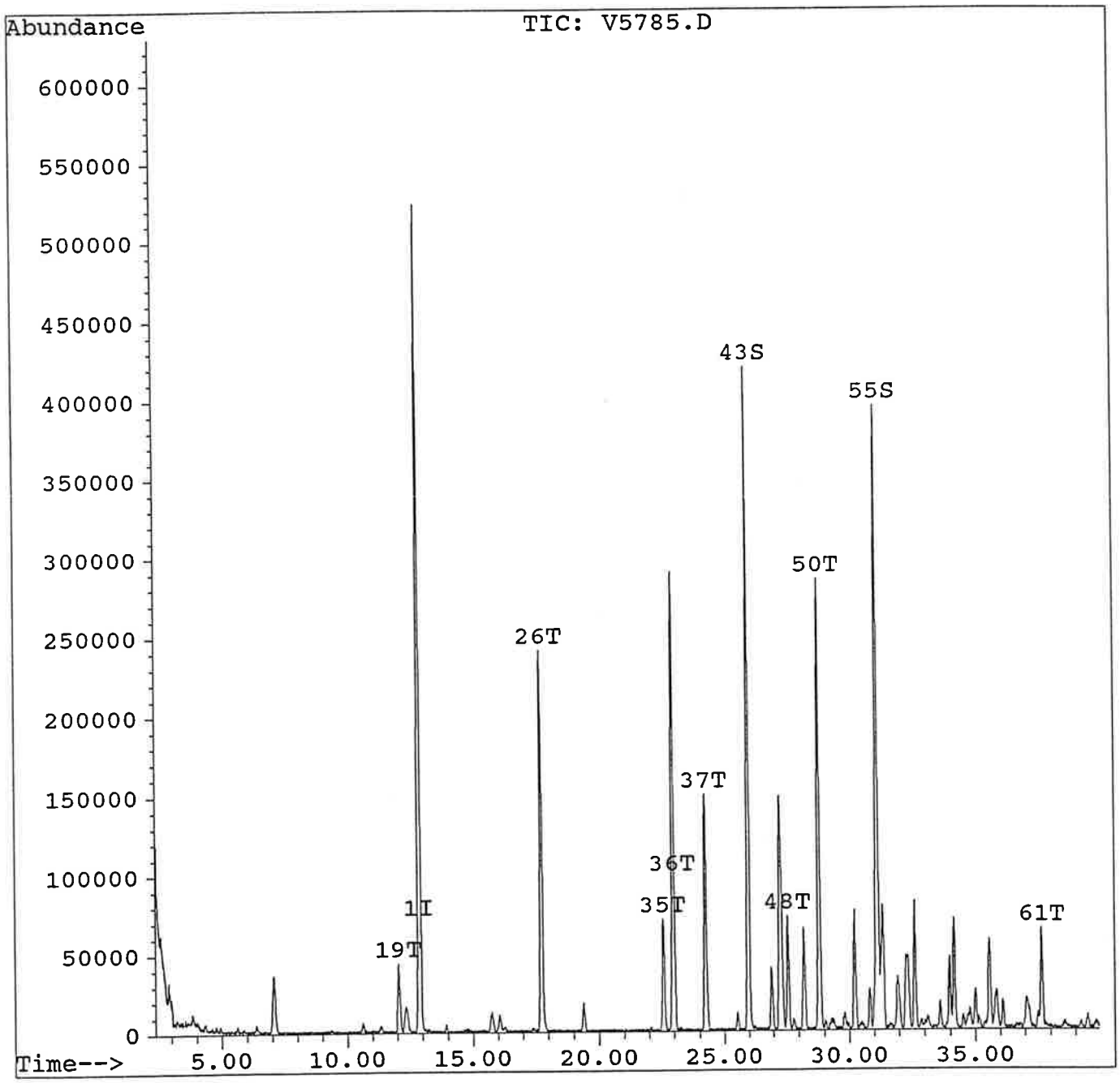
110

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5785.D
Acq On : 28 Oct 98 4:10 pm
Sample : R-6122.3
Misc : Arco - RC-EL-38-1098
Quant Time: Oct 29 8:51 1998

Vial: 9
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5786.D
Acq On : 28 Oct 98 5:13 pm
Sample : R-6122.4
Misc : Arco - RC-EL-38-1098A
Quant Time: Oct 29 9:18 1998

Vial: 10
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.88	96	1599877	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.97	95	553083	4.58	ug/L	91.59%
55) 1,2-dichlorobenzene-d4	31.13	152	338191	4.29	ug/L	85.75%
Target Compounds						Qvalue
19) Benzene	12.04	78	254827	0.79	ug/L	99
26) Toluene	17.72	91	1951173	4.90	ug/L	100
35) Ethylbenzene	22.55	91	905348	2.52	ug/L	95
36) m&p-xylenes	22.96	106	1284545	5.03	ug/L	96
37) o-xylene	24.23	91	1356030	5.59	ug/L	97
45) n-propylbenzene	26.91	91	677106	1.48	ug/L	98
48) 1,3,5-trimethylbenzene	27.56	105	678643	2.78	ug/L	98
50) 1,2,4-trimethylbenzene	28.80	105	2691751	11.68	ug/L	96
61) Naphthalene	37.64	128	112214	1.29	ug/L	96

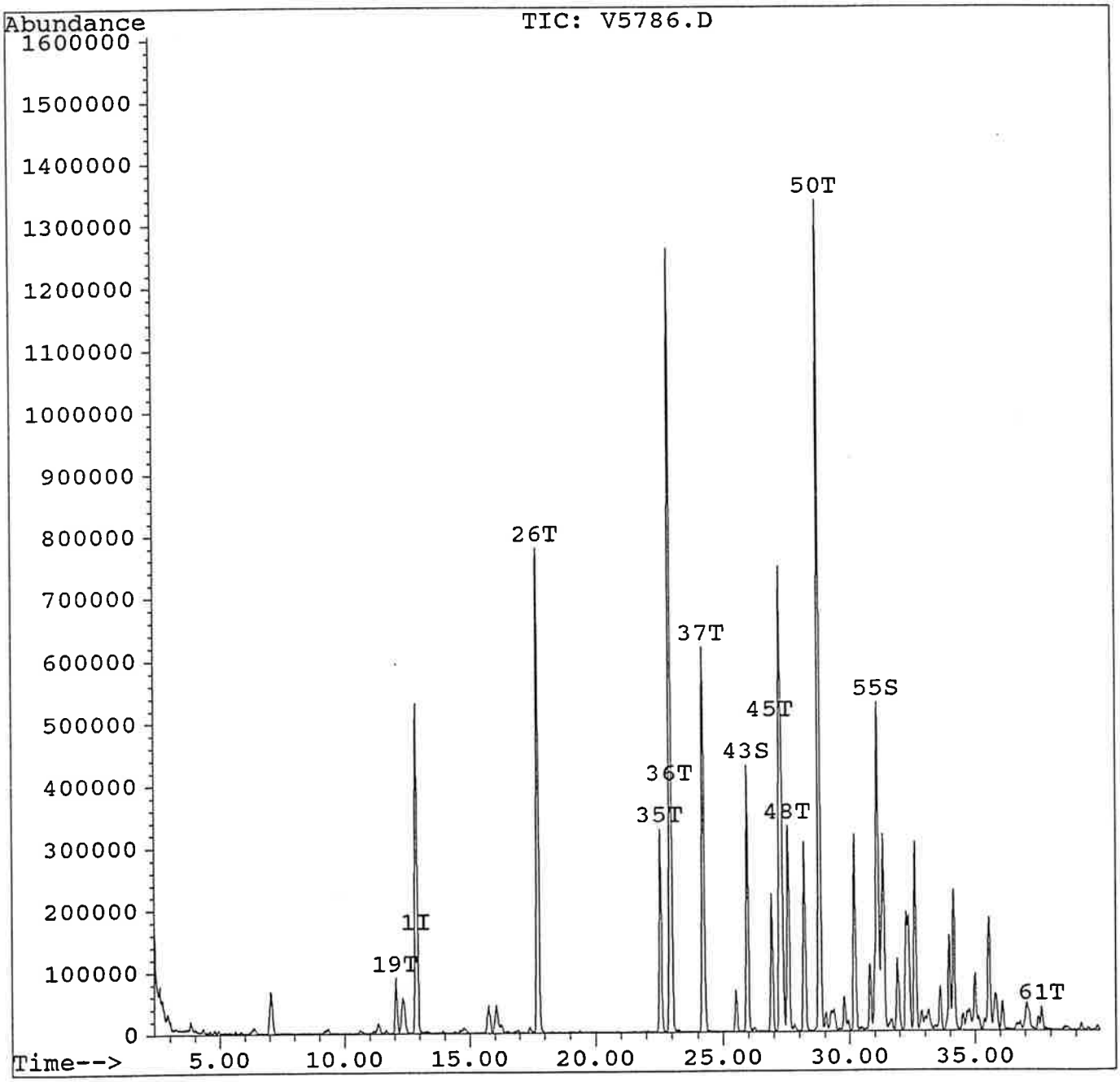
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5786.D
Acq On : 28 Oct 98 5:13 pm
Sample : R-6122.4
Misc : Arco - RC-EL-38-1098A
Quant Time: Oct 29 9:18 1998

Vial: 10
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



313

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5787.D
Acq On : 28 Oct 98 6:00 pm
Sample : R-6122.5
Misc : Arco - RC-EC-00-1098
Quant Time: Oct 29 8:51 1998

Vial: 11
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.88	96	1548516	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.98	95	552905	4.73	ug/L	94.59%
55) 1,2-dichlorobenzene-d4	31.13	152	334892	4.39	ug/L	87.73%
Target Compounds						Qvalue

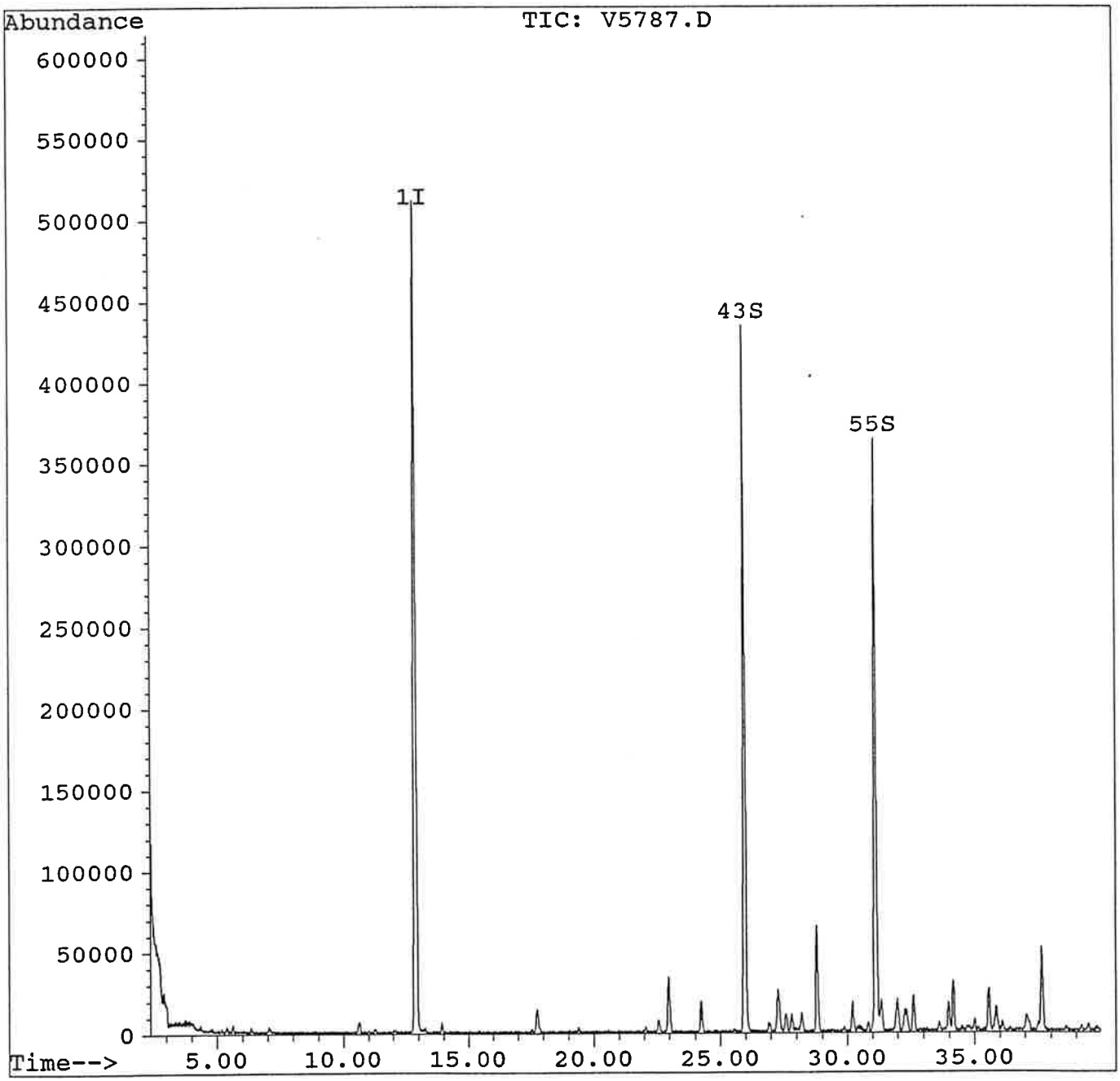
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5787.D
Acq On : 28 Oct 98 6:00 pm
Sample : R-6122.5
Misc : Arco - RC-EC-00-1098
Quant Time: Oct 29 8:51 1998

Vial: 11
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5788.D
Acq On : 28 Oct 98 6:46 pm
Sample : R-6122.6
Misc : Arco - RC-EC-27-1098
Quant Time: Oct 29 9:14 1998

Vial: 12
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.88	96	1518426	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.98	95	503030	4.39	ug/L	87.77%
55) 1,2-dichlorobenzene-d4	31.13	152	314613	4.20	ug/L	84.05%
Target Compounds						Qvalue
19) Benzene	12.06	78	60617	0.20	ug/L	94
26) Toluene	17.73	91	110140	0.29	ug/L	94
36) m&p-xylenes	22.96	106	53881	0.22	ug/L	97
37) o-xylene	24.25	91	78257	0.34	ug/L	97

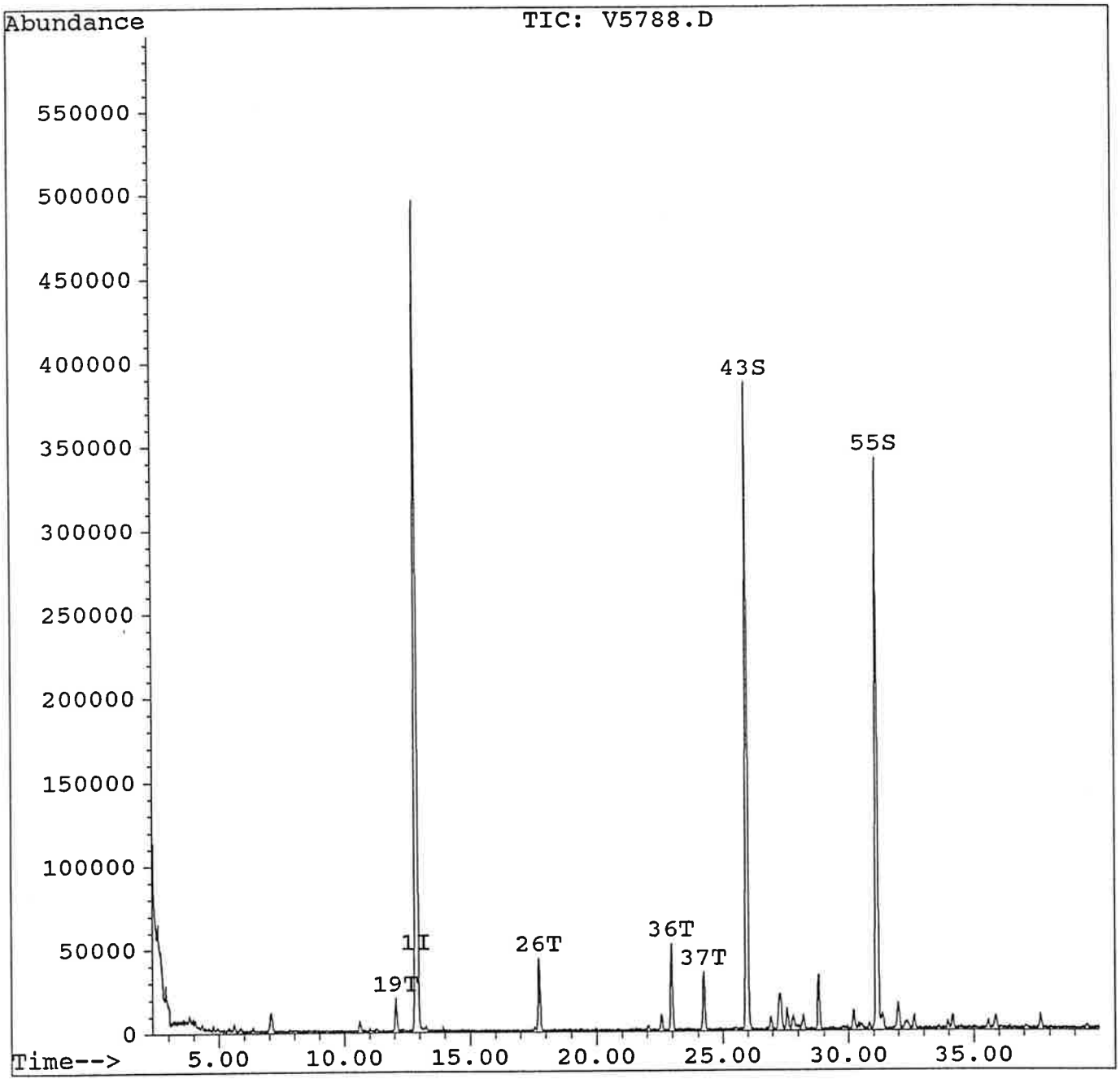
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5788.D
Acq On : 28 Oct 98 6:46 pm
Sample : R-6122.6
Misc : Arco - RC-EC-27-1098
Quant Time: Oct 29 9:14 1998

Vial: 12
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



017

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5789.D
Acq On : 28 Oct 98 7:33 pm
Sample : R-6122.7
Misc : Arco - RC-EC-57-1098
Quant Time: Oct 29 9:12 1998

Vial: 13
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.88	96	1558932	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.97	95	514953	4.38	ug/L	87.51%
55) 1,2-dichlorobenzene-d4	31.13	152	314091	4.09	ug/L	81.74%
Target Compounds						Qvalue

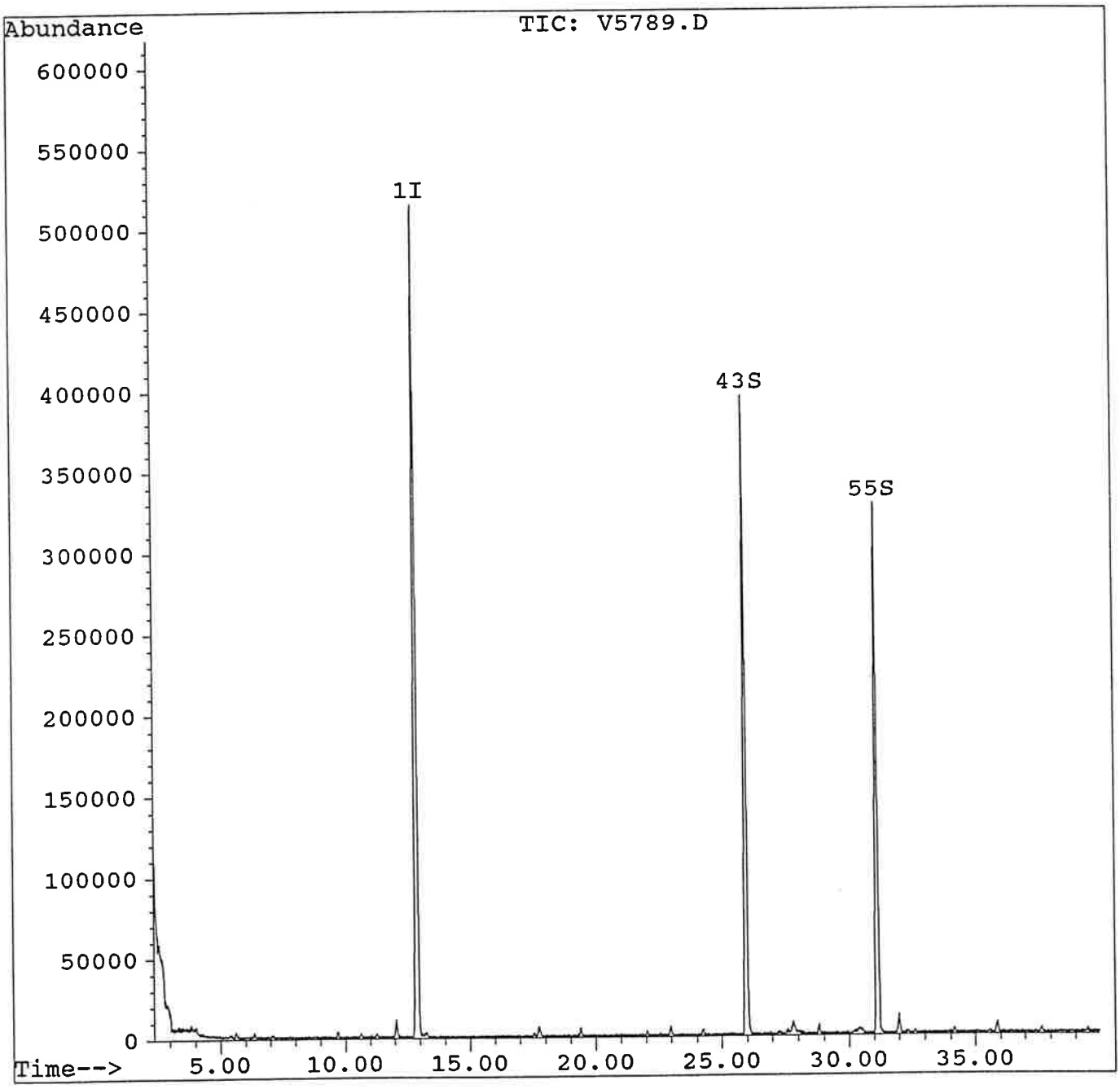
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5789.D
Acq On : 28 Oct 98 7:33 pm
Sample : R-6122.7
Misc : Arco - RC-EC-57-1098
Quant Time: Oct 29 9:12 1998

Vial: 13
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5790.D
Acq On : 28 Oct 98 8:19 pm
Sample : R-6122.8
Misc : Arco - RC-ER-66-1098
Quant Time: Oct 29 8:52 1998

Vial: 14
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc Units	Dev(Min)
1) Fluorobenzene	12.88	96	1656337	5.00 ug/L	0.00
System Monitoring Compounds					%Recovery
43) 4-bromofluorobenzene	25.98	95	552556	4.42 ug/L	88.38%
55) 1,2-dichlorobenzene-d4	31.13	152	342587	4.20 ug/L	83.91%
Target Compounds					Qvalue

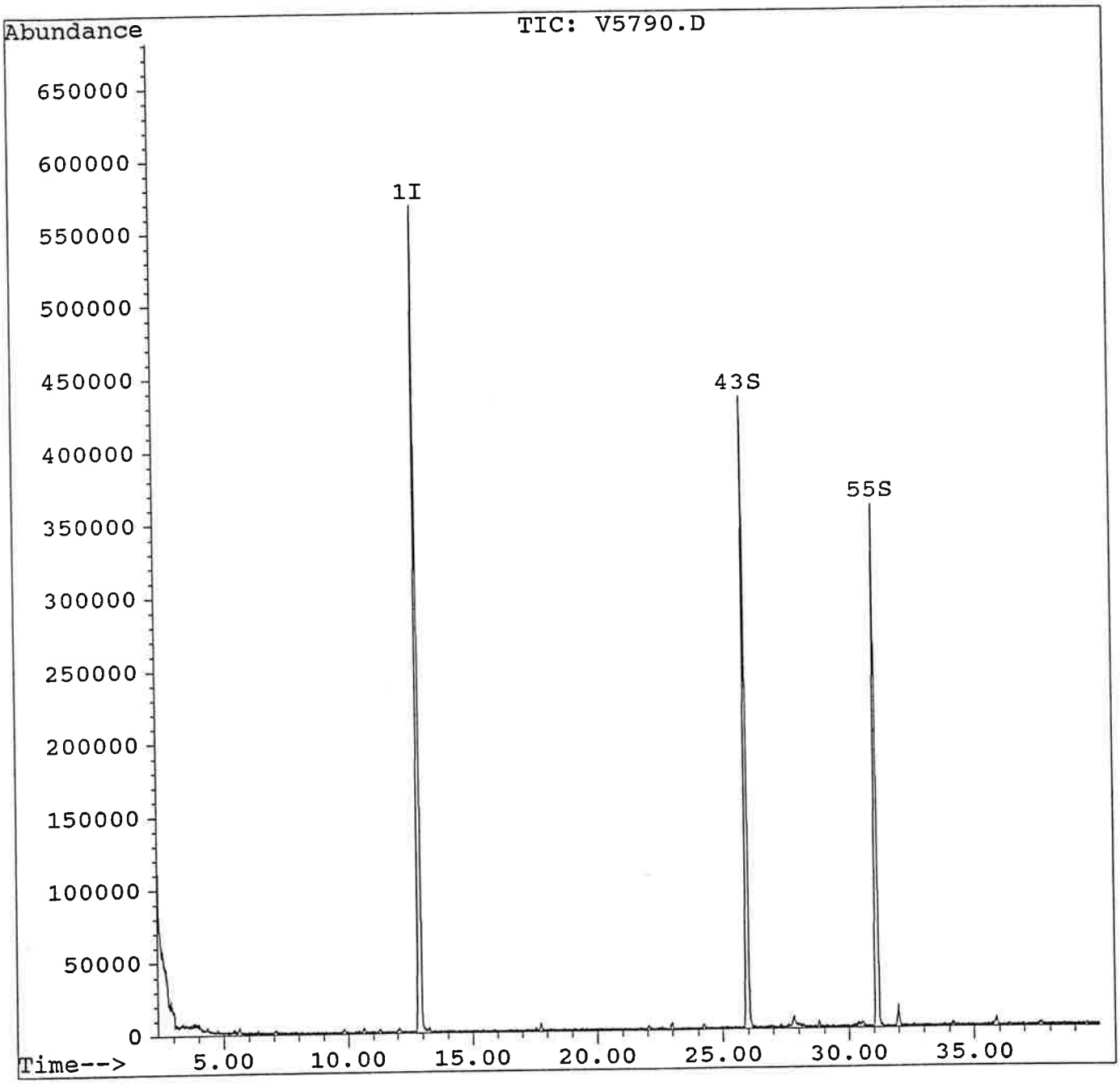
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5790.D
Acq On : 28 Oct 98 8:19 pm
Sample : R-6122.8
Misc : Arco - RC-ER-66-1098
Quant Time: Oct 29 8:52 1998

Vial: 14
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



121

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5791.D
Acq On : 28 Oct 98 9:06 pm
Sample : R-6122.9
Misc : Arco - RC-ER-35-1098
Quant Time: Oct 29 9:11 1998

Vial: 15
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.88	96	1480994	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.97	95	510317	4.56	ug/L	91.29%
55) 1,2-dichlorobenzene-d4	31.14	152	306347	4.20	ug/L	83.92%
Target Compounds						Qvalue
19) Benzene	12.04	78	154572	0.52	ug/L	98
26) Toluene	17.73	91	305008	0.83	ug/L	98
35) Ethylbenzene	22.56	91	84827	0.26	ug/L	99
36) m&p-xylenes	22.96	106	174468	0.74	ug/L	95
37) o-xylene	24.24	91	252065	1.12	ug/L	96
48) 1,3,5-trimethylbenzene	27.57	105	75373	0.33	ug/L	88
50) 1,2,4-trimethylbenzene	28.80	105	218585	1.02	ug/L	95

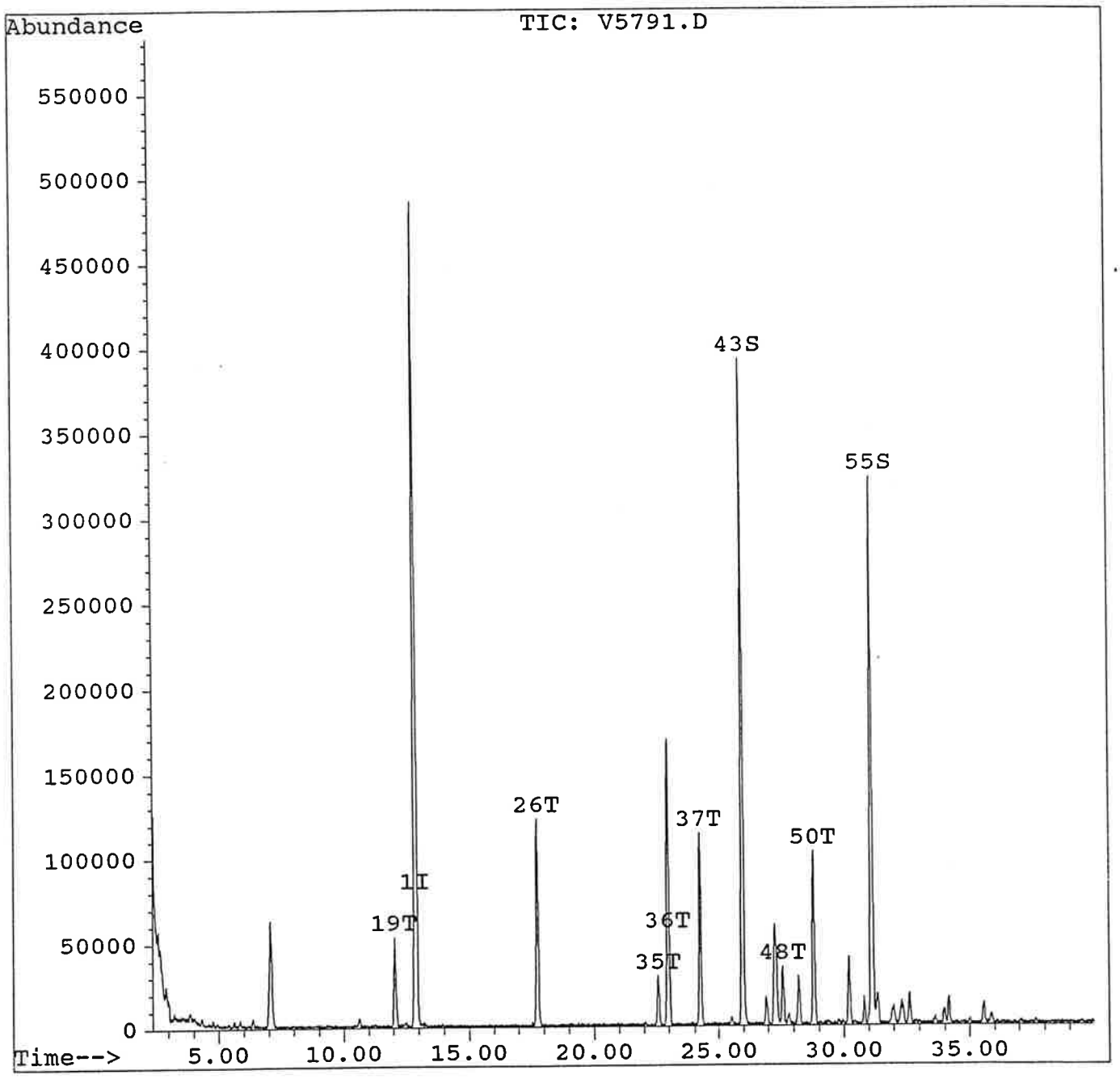
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5791.D
Acq On : 28 Oct 98 9:06 pm
Sample : R-6122.9
Misc : Arco - RC-ER-35-1098
Quant Time: Oct 29 9:11 1998

Vial: 15
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Thu Oct 08 09:10:03 1998
Response via : Multiple Level Calibration



RELIANCE LABORATORIES, INC.

WATER VOLATILE SYSTEM MONITORING COMPOUND RECOVERY

Customer : Arco

	SAMPLE NO.	SMC1 #	SMC2 #	#	OTHER #	TOT OUT
01	VBLK01	87	78			
02	R-6122.1	94	88			
03	R-6122.2	91	88			
04	R-6122.3	92	87			
05	R-6122.4	92	86			
06	R-6122.5	95	88			
07	R-6122.6	88	84			
08	R-6122.7	88	82			
09	R-6122.8	88	84			
10	R-6122.9	91	84			
11	R-6122.6	94	90			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

QC LIMITS
(75-115)
(75-115)

SMC1 = 4-Bromofluorobenzene
SMC2 = 1,2-dichlorobenzene-d4

\# Column to be used to flag recovery values

* Values outside of contract required QC limits

D System Monitoring Compound diluted out

FORM II VOA-1

RELIANCE LABORATORIES, INC.

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Matrix Spike - Sample No.: R-6109.2

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
Benzene	2.00	0.00	2.15	108	(80-120)
Toluene	2.00	0.00	1.79	90	(80-120)
Ethylbenzene	2.00	0.00	1.95	98	(80-120)
m&p-xylenes	2.00	0.00	2.03	102	(80-120)
o-xylene	2.00	0.00	2.15	108	(80-120)
Styrene	2.00	0.00	1.79	90	(80-120)

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MS % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
Benzene	2.00	1.99	100	8	20	(80-120)
Toluene	2.00	1.63	82	9	20	(80-120)
Ethylbenzene	2.00	1.78	89	9	20	(80-120)
m&p-xylenes	2.00	1.88	94	8	20	(80-120)
o-xylene	2.00	1.98	99	8	20	(80-120)
Styrene	2.00	1.62	81	10	20	(80-120)

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

Comments: _____

RELIANCE LABORATORIES, INC.

VOLATILE METHOD BLANK SUMMARY

VBLK0

Customer : Arco

Lab File ID: V5782.D

Lab Sample ID: BLANK1

Date Analyzed: 10/28/98

Time Analyzed: 1351

GC Column: DB-624 ID: 0.53 (mm)

Instrument ID: HP5971A

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	R-6122.1	EL-20	V5783.D	1437
02	R-6122.2	EL-20A	V5784.D	1524
03	R-6122.3	EL-38	V5785.D	1610
04	R-6122.4	EL-38A	V5786.D	1713
05	R-6122.5	EC-00	V5787.D	1800
06	R-6122.6	EC-27	V5788.D	1846
07	R-6122.7	EC-57	V5789.D	1933
08	R-6122.8	ER-66	V5790.D	2019
09	R-6122.9	ER-35	V5791.D	2106
10	R-6122.6	EC-27DUP	V5792.D	2152
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COMMENTS:

FORM IV VOA

VOLATILE ORGANIC ANALYSIS DATA SHEET

Client **Arco - Method blank** Sample ID: blank

Sample Amount: 20 mL Matrix: Water Analyst: vb Lab File ID: v5782.d

Units: ug/L Date Analyzed: 10/28/98

CAS No	Compound	Concentration	MDL
71-43-2	Benzene	< 0.13	0.13
108-88-3	Toluene	< 0.60	0.60
100-41-4	Ethylbenzene	< 0.22	0.22
1330-20-7	m + p-Xylenes	< 0.22	0.22
1330-20-7	o-Xylene	< 0.58	0.58

ND = Not detected
B = Compound found in blank and sample
J = Detected below MDL
E = Out of calibration range

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5782.D
Acq On : 28 Oct 98 1:51 pm
Sample : blank
Misc : blank
Quant Time: Oct 29 8:51 1998

Vial: 6
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Mon Nov 09 15:27:45 1998
Response via : Multiple Level Calibration

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	12.87	96	1672566	5.00	ug/L	0.00
System Monitoring Compounds						%Recovery
43) 4-bromofluorobenzene	25.98	95	546294	4.33	ug/L	86.53%
55) 1,2-dichlorobenzene-d4	31.13	152	321040	3.89	ug/L	77.87%
Target Compounds						Qvalue

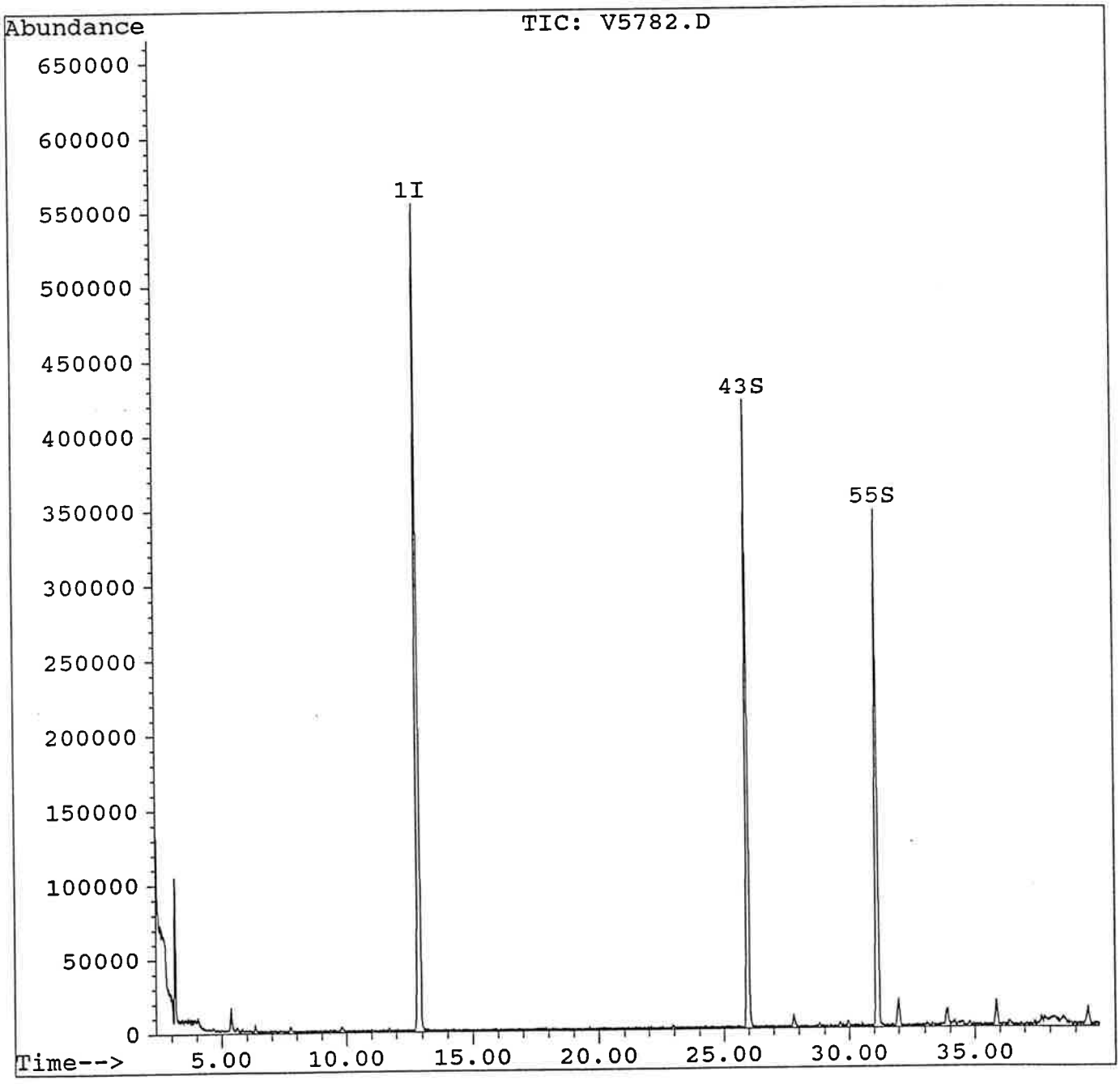
(#) = qualifier out of range (m) = manual integration

Quantitation Report

Data File : C:\HPCHEM\1\DATA\V5782.D
Acq On : 28 Oct 98 1:51 pm
Sample : blank
Misc : blank
Quant Time: Oct 29 8:51 1998

Vial: 6
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics
Last Update : Mon Nov 09 15:27:45 1998
Response via : Multiple Level Calibration



RELIANCE LABORATORIES, INC.

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Customer : _____

Lab File ID: V5729.D

BFB Injection Date: 10/7/98

Instrument ID: HP5971A

BFB Injection Time: 0852

GC Column: DB-624 ID: 0.53 (mm)

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	17.1
75	30.0 - 66.0% of mass 95	41.4
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	6.5
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	72.0
175	4.0 - 9.0% of mass 174	5.4 (7.5)1
176	93.0 - 101.0% of mass 174	71.7 (99.5)1
177	5.0 - 9.0% of mass 176	4.3 (6.0)2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following SAMPLES, MS, MSD, BLANKS and STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD001	ICC001	V5730.D	10/7/98	0928
02	VSTD002	ICC002	V5731.D	10/7/98	1017
03	VSTD005	ICC005	V5732.D	10/7/98	1106
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05					
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22					

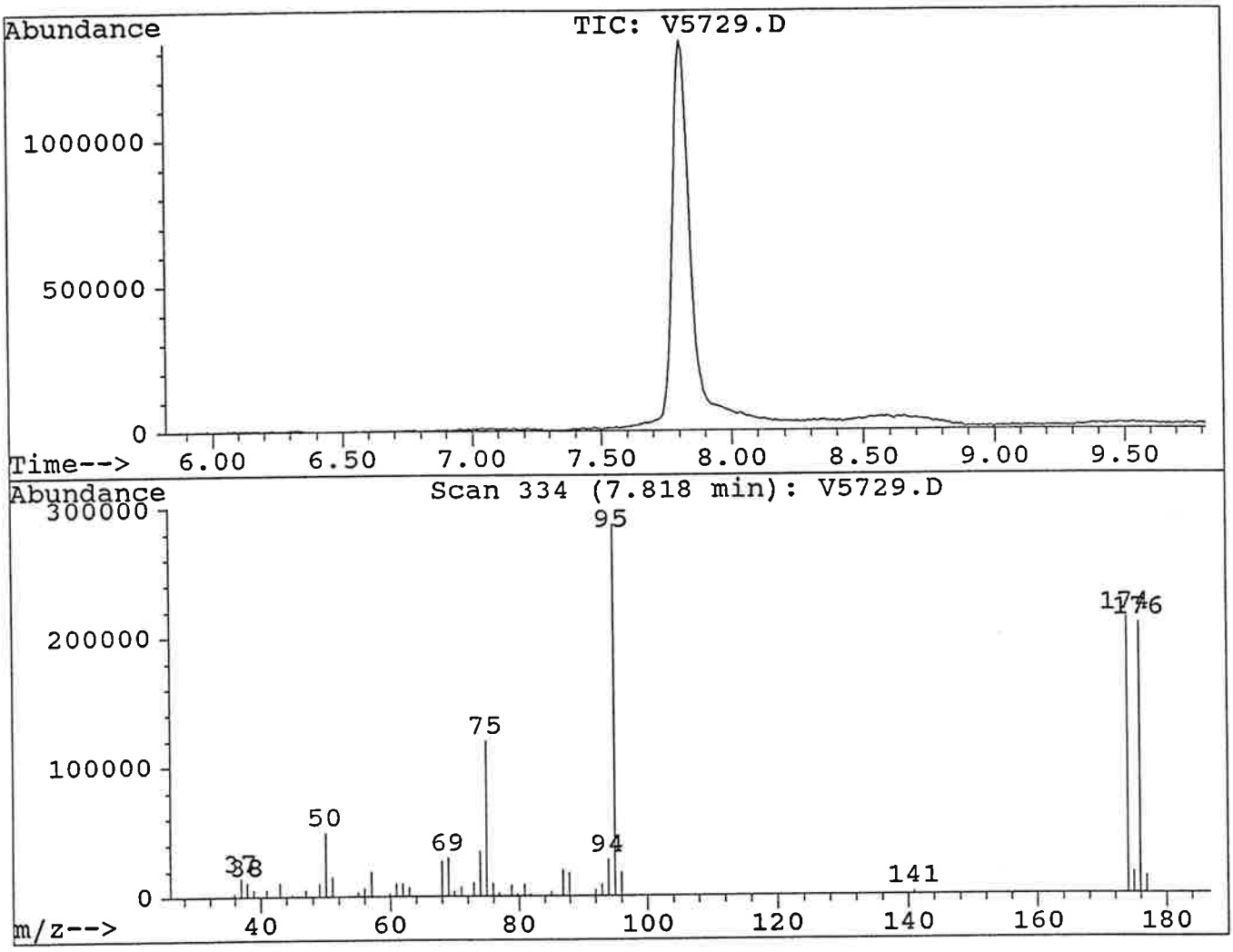
FORM V.VOA

BFB

Data File : C:\HPCHEM\1\DATA\V100798\V5729.D
Acq On : 7 Oct 98 8:52 am
Sample : bfb
Misc :

Vial: 1
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics



Peak Apex is scan: 334

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	17.2	49328	PASS
75	95	30	80	41.5	119256	PASS
95	95	100	100	100.0	287040	PASS
96	95	5	9	6.4	18368	PASS
173	174	0	2	0.0	0	PASS
174	95	50	100	74.0	212480	PASS
175	174	5	9	8.0	17104	PASS
176	174	95	101	98.1	208448	PASS
177	176	5	9	6.6	13768	PASS

V5729.D RUN524.M Mon Nov 09 16:24:31 1998

RELIANCE LABORATORIES, INC.

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Customer : Arco

Lab File ID: V5780.D

BFB Injection Date: 10/28/98

Instrument ID: HP5971A

BFB Injection Time: 1134

GC Column: DB-624 ID: 0.53 (mm)

m/e	ION ABUNDANCE CRITERIA	%RELATIVE ABUNDANCE
50	8.0 - 40.0% of mass 95	17.4
75	30.0 - 66.0% of mass 95	40.2
95	Base peak, 100% relative abundance	100.0
96	5.0 - 9.0% of mass 95	5.9
173	Less than 2.0% of mass 174	0.0 (0.0)1
174	50.0 - 120.0% of mass 95	71.8
175	4.0 - 9.0% of mass 174	5.4 (7.6)1
176	93.0 - 101.0% of mass 174	71.6 (99.7)1
177	5.0 - 9.0% of mass 176	4.1 (5.8)2

1-Value is % mass 174 2-Value is % mass 176

This check applies to the following SAMPLES, MS, MSD, BLANKS and STANDARDS:

	SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD050	CC002	V5781.D	10/28/98	1301
02	VBLK01	BLANK1	V5782.D	10/28/98	1351
03	R-6122.1	EL-20	V5783.D	10/28/98	1437
04	R-6122.2	EL-20A	V5784.D	10/28/98	1524
05	R-6122.3	EL-38	V5785.D	10/28/98	1610
06	R-6122.4	EL-38A	V5786.D	10/28/98	1713
07	R-6122.5	EC-00	V5787.D	10/28/98	1800
08	R-6122.6	EC-27	V5788.D	10/28/98	1846
09	R-6122.7	EC-57	V5789.D	10/28/98	1933
10	R-6122.8	ER-66	V5790.D	10/28/98	2019
11	R-6122.9	ER-35	V5791.D	10/28/98	2106
12	R-6122.6	EC-27DUP	V5792.D	10/28/98	2152
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					

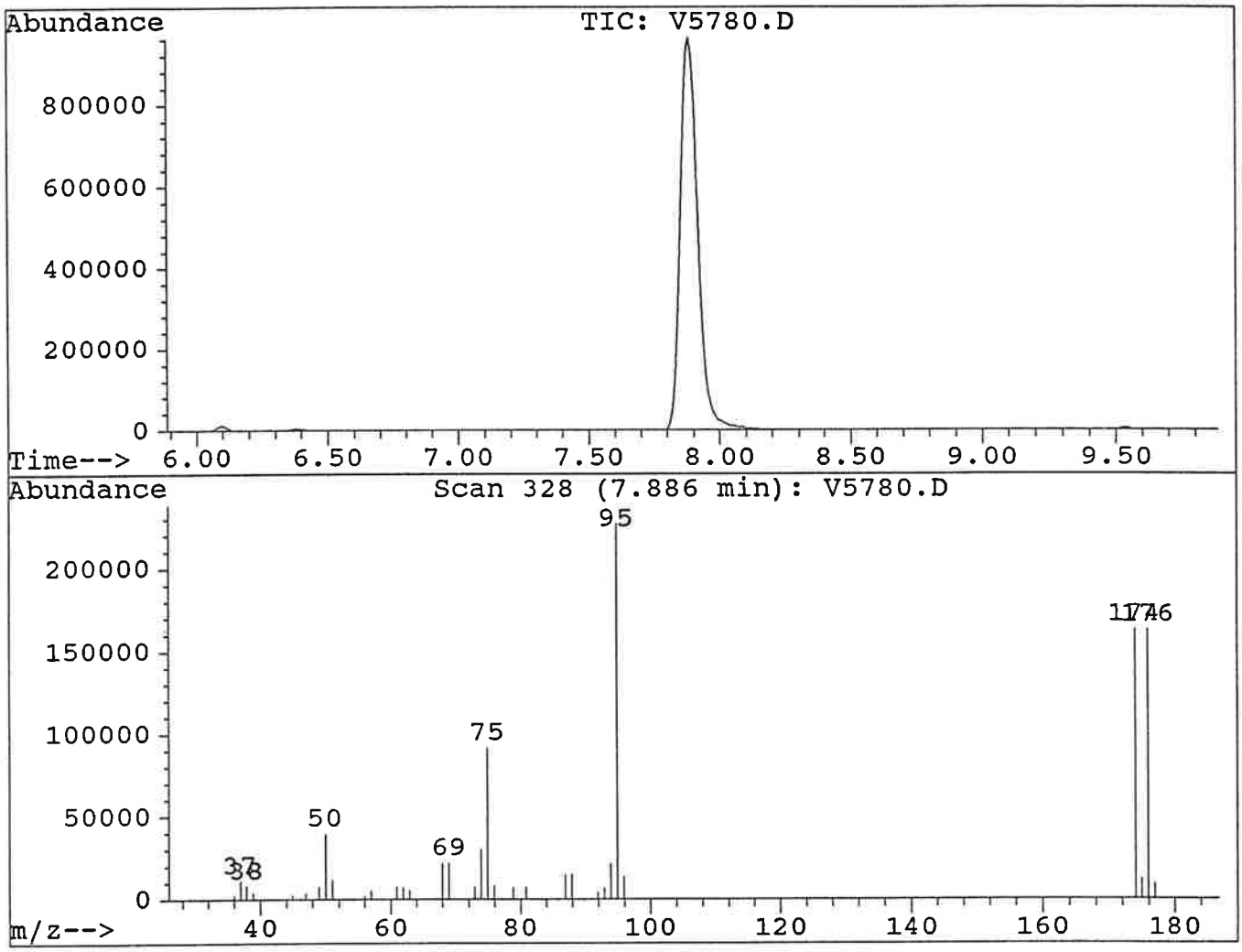
FORM V VOA

BFB

Data File : C:\HPCHEM\1\DATA\V5780.D
Acq On : 28 Oct 98 11:34 am
Sample : bfb
Misc :

Vial: 1
Operator: vb
Inst : 5971 - In
Multiplr: 1.00

Method : C:\HPCHEM\1\METHODS\RUN524.M
Title : 524.2 Purgable Organics



Peak Apex is scan: 328

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	17.4	39464	PASS
75	95	30	80	40.2	91408	PASS
95	95	100	100	100.0	227328	PASS
96	95	5	9	5.9	13431	PASS
173	174	0	2	0.0	0	PASS
174	95	50	100	71.8	163328	PASS
175	174	5	9	7.6	12332	PASS
176	174	95	101	99.7	162880	PASS
177	176	5	9	5.8	9431	PASS

V5780.D RUN524.M Mon Nov 09 15:27:21 1998

RELIANCE LABORATORIES, INC.

VOLATILE ORGANICS INITIAL CALIBRATION DATA

Instrument ID: HP5971A

Calibration Date(s): 10/7/98 10/7/98

Calibration Times: 0928 1106

GC Column: DB-624 ID: 0.53 (mm)

Lab File ID: RRF01 = V5730.D RRF02 = V5731.D
RRF05 = V5732.D

COMPOUND	RRF05	RRF02	RRF01			$\overline{RRF}$	% RSD
Benzene	0.962	0.957	1.144			1.021	10.4
Toluene	0.878	0.874	1.041			0.931	10.2
Ethylbenzene	1.048	1.045	1.209			1.101	8.5
m&p-xylenes	0.716	0.704	0.849			0.756	10.6
o-xylene	0.738	0.712	0.813			0.754	7.0
Styrene	0.551	0.516	0.575			0.547	5.4
4-Bromofluorobenzene	0.393	0.388	0.382			0.388	1.4
1,2-dichlorobenzene-d4	0.262	0.260	0.242			0.255	4.3

* Compounds with required minimum RRF and maximum %RSD values.
All other compounds must meet a minimum RRF of 0.010.

Page 1 of 1

FORM VI VOA

RELIANCE LABORATORIES, INC.

VOLATILE CONTINUING CALIBRATION CHECK

Customer : Arco

Instrument ID: HP5971A Calibration Date: 10/28/98 Time: 1301

Lab File ID: V5781.D Init. Calib. Date(s): 10/7/98 10/7/98

Init. Calib. Times: 0928 1106

GC Column: DB-624 ID: 0.53 (mm)

COMPOUND	$\overline{RRF}$	RRF20	MIN RRF	%D	MAX %D
Benzene	1.021	0.997		2.4	
Toluene	0.931	0.915		1.7	
Ethylbenzene	1.101	1.128		-2.5	
m&p-xylenes	0.756	0.768		-1.6	
o-xylene	0.754	0.736		2.4	
Styrene	0.547	0.509		6.9	
4-Bromofluorobenzene	0.388	0.334		13.9	
1,2-dichlorobenzene-d4	0.255	0.219		14.1	

All other compounds must meet a minimum RRF of 0.010.

RELIANCE LABORATORIES, INC.

VOLATILE INTERNAL STANDARD AREA AND RT SUMMARY

Customer : Arco

Lab File ID (Standard): V5781.D Date Analyzed: 10/28/98

Instrument ID: HP5971A Time Analyzed: 1301

GC Column: DB-624 ID: 0.53 (mm)

		IS1 AREA #	RT #	AREA #	RT #	AREA #	RT #
	12 HOUR STD	1570687	12.90				
	UPPER LIMIT	3141374	13.40				
	LOWER LIMIT	785344	12.40				
	SAMPLE NO.						
01	VBLK01	1672566	12.87				
02	R-6122.1	1557949	12.88				
03	R-6122.2	1639515	12.87				
04	R-6122.3	1557842	12.87				
05	R-6122.4	1599877	12.88				
06	R-6122.5	1548516	12.88				
07	R-6122.6	1518426	12.88				
08	R-6122.7	1558932	12.88				
09	R-6122.8	1656337	12.88				
10	R-6122.9	1480994	12.88				
11	R-6122.6	1425478	12.87				
12							
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IS1 = Fluorobenzene

AREA UPPER LIMIT = +100% of internal standard area
AREA LOWER LIMIT = -50% of internal standard area
RT UPPER LIMIT = +0.50 minutes of internal standard RT
RT LOWER LIMIT = -0.50 minutes of internal standard RT

Column used to flag values outside QC limits with an asterisk
* Values outside of QC limits.

FORM VIII VOA

STATE OF NEW JERSEY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

Let's protect our earth

Certifies That

Reliance Laboratories, Inc.
3090 Wood Bridge Avenue
Edison, NJ 08837

having duly met the requirements of the

Regulations Governing Laboratory Certification
And Standards Of Performance N.J.A.C. 7:18 et. seq.

is hereby approved as a

State Certified Water Laboratory

To perform the analyses as indicated on the Annual Certified Parameter List which must accompany this certificate to be valid

12687
PERMANENT CERTIFICATION NUMBER

January 11, 1989
DATE

ACTING COMMISSIONER
DEPARTMENT OF ENVIRONMENTAL PROTECTION

This certification is subject to unannounced laboratory inspections as specified by N.J.A.C. 7:18-2.11(d) and agreed to by the Laboratory Manager on filing the application

TO BE CONSPICUOUSLY DISPLAYED AT THE LABORATORY WITH THE ANNUAL CERTIFIED PARAMETER LIST.